22 Angel shark *Squatina squatina* in the Northeast Atlantic

22.1 Stock distribution

Angel shark *Squatina squatina* was historically distributed from the British Isles southwards to western Africa, including the Mediterranean Sea (Roux, 1986). As such the species distribution covers parts of ICES subareas 4 and 6–9.

Stock structure is not known, but available data for this and other species of angel shark indicate high site specificity and possibly localized stocks. Mark–recapture data for angel shark have shown that a high proportion of fish are recaptured close to the original release location (Quigley, 2006), although some individuals undertake longer-distance movements. The failure of former populations in the southern North Sea and parts of the English Channel to re-establish is also suggestive of limited mixing. Studies on other species of angel shark elsewhere in the world have also indicated that angel sharks show limited movements and limited mixing (e.g. Gaida, 1997; Garcia *et al.*, 2015). STECF (2003) noted that angel sharks "*should be managed on smallest possible spatial scale*". The long-term decline of this species from various parts of its geographic range have been reported in recent studies (e.g. Hiddink *et al.,* 2019; Shepherd *et al.,* 2019; Bom *et al.,* 2020).

Given that this species is considered to be extirpated from parts of its North Atlantic range and is highly threatened both in the ICES area and elsewhere in its geographical range, ICES provide advice at the species level.

22.2 The fishery

22.2.1 History of the fishery

Angel shark is thought to have been the subject of exploitation for much of the 19th century and parts of the 20th century, and was exploited for meat, liver and skin. This species was the original fish termed 'monkfish' until catches declined and anglerfish *Lophius piscatorius* became a marketable species. As catches declined over the course of the 20th century, it was landed occasionally as a 'curio' for fish stalls.

Given the coastal nature of the species, it was also subject to fishing pressure from recreational fishing in parts of its range (e.g. the coasts of Ireland and Wales).

The species has been extirpated from parts of its former range, and most reports of this species in the ICES area are now from occasional bycatch records in trawl and gillnet fisheries (e.g. Tully, 2011; Iglésias *et al.*, 2020).

22.2.2 The fishery in 2020

No new information.

22.2.3 ICES Advice applicable

In 2008, ICES advised that angel shark in the North Sea eco-region was "*extirpated in the North Sea. It may still occur in Division VIId*" (ICES, 2008a). For the Celtic Seas, ICES advised that it "*has a localized and patchy distribution, and is extirpated from parts of its former range. It should receive the highest possible protection. Any incidental bycatch should not be landed, but returned to the sea, as they are likely to have a high survival rate*" (ICES, 2008b).

In both 2010 and 2012, ICES advised that it should remain on the list of Prohibited Species (ICES, 2012).

In 2015, ICES advised that "*when the precautionary approach is applied for angel shark in the Northeast Atlantic, no targeted fisheries should be permitted and bycatch should be minimized. ICES considers that this species should remain on the EU prohibited species list. This advice is valid for 2016 to 2019*".

In 2019, ICES advised that "*when the precautionary approach is applied, there should be zero catches in each of the years 2020–2023*".

22.2.4 Management applicable

Council Regulation (EC) 43/2009 stated that "*Angel shark in all EC waters may not be retained on board. Catches of these species shall be promptly released unharmed to the extent practicable*".

It was subsequently included on the list of Prohibited Species, under which it is prohibited for EU vessels to fish for, to retain on board, to transship and to land angel shark in EU waters (e.g. Council Regulations (EC) 2018/120).

In 2019, angel shark was listed as a prohibited species (in all Union waters) on Annex I of EU (2019), and thus is no longer specified on the annual documents relating to EU fishing opportunities.

Within the Mediterranean Sea, GFCM "*Recommendation GFCM/42/2018/2 on fisheries management measures for the conservation of sharks and rays in the GFCM area of application, amending Recommendation GFCM/36/2012/3*" states that "*CPCs shall ensure a high protection from fishing activities for elasmobranch species listed in Annex II of the SPA/BD Protocol of the Barcelona Convention* [that includes angel shark], *which must be released unharmed and alive, to the extent possible*" and that "*Specimens of shark species listed in Annex II of the SPA/BD Protocol shall not be retained on board, transhipped, landed, transferred, stored, sold or displayed or offered for sale*".

Within the UK, angel shark is afforded protection through its listing on the Wildlife and Countryside Act (WCA) and it is also listed on Scottish Statutory Instrument (SI) 2012 No. 63 (the Sharks, Skates and Rays (Prohibition of Fishing, Trans-shipment and Landing) (Scotland) Order).

In 2017, angel shark was added to Appendices I and II of the Convention on the Conservation of Migratory Species of Wild Animals (CMS; see Section 22.12). CMS Parties that are Range States to Appendix I listed species should, under Article III(5), "*prohibit the taking of animals belonging to such species*".

In 2019, The Spanish Ministerio para la Transición Ecológica updated the national "*Listado de Especies Silvestres en Régimen de Protección Especial y del Catálogo Español de Especies Amenazadas*" (List of Wild Species under Special Protection Regime and the Spanish Catalogue of Threatened Species) to include angel shark (Boletín Oficial del Estado, BOE, 2019).

22.3 Catch data

22.3.1 Landings

Angel shark became increasingly rare in landings data over the available time period and was reported only rarely prior to it being listed as a Prohibited Species (Table 22.1; Figure 22.1). It is believed that the peak in UK official landings in 1997 from Divisions 7.j-k were either misreported anglerfish (also called monkfish) or hake, given that angel shark is a more coastal species. These figures have been removed from the WGEF estimates of landings. French landings declined from >20 t in 1978 to less than 1 t per year prior to the prohibition on landings.

Whilst some nominal records were available in French national landings data for 2012 and 2013, the reliability of these data is uncertain, due to the areas and quantities reported, and catch gears. Further analyses and clarification of these data are required, and as such they are not included here.

There are no data available for the numbers of angel shark landed during the recreational fisheries that existed in parts of their range.

22.3.2 Discards

Limited data are available. Analyses of the main discard observer programme for the English and Welsh fleets found that no angel sharks had been observed (Silva *et al.*, 2019), whilst observer trips conducted by the Sea Mammal Research Unit (SMRU) recorded three individuals over the period 2011–2014 (Allen Kingston, pers. comm. 2015). These specimens were caught on 29 April 2011 (50.93°N, 6.65°W, 95 m water depth) and 19 September 2014 (53.40°N, 3.60°W and 53.40°N, 3.63°W, 15–16 m water depth). All were caught in tangle or trammel nets (soak times of 64–78 hours), were of estimated individual weights of 15–25 kg and were all dead.

Examination of data collected under the French discard observer programme (2003–2013) indicated that only two individuals were observed (both in 2012) in the ICES area. According to observations from French fish markets and catches reported by fishermen, four additional individuals (two in 2007 and two in 2010) were also caught (S. Iglésias, pers. comm.). All these six individuals were caught off Pembrokeshire (Wales) at the southern entrance to St George's Channel. Iglésias *et al.* (2020) reported that a female angel shark (126 cm; 26 kg) caught by a bottom trawler (51.3810-51.4823°N; 5.5248–5.5603°W; 100 m depth; March 2018) was not discarded but eaten on board. It is unknown if this was an isolated incidence.

WKSHARK3 also reviewed available information on angel sharks observed during on-board observer programmes, also concluding this species was only observed very occasionally (ICES, 2017).

Further collation and analyses of contemporary discard and observer data should be undertaken at the 2023 WGEF meeting.

22.3.3 Quality of catch data

Catch data are incomplete, as data are unavailable for the periods when angel shark was more abundant. There are some concerns over the quality of some of the landings data (see above). The listing as a 'Prohibited Species' will result in commercial landings data nearing zero. Further studies of possible bycatch and fate of discards in known areas of occurrence would be needed to better estimate commercial catch.

Following the WKSHARKS data call in 2016, landings data-from 2005–2015 were re-assessed by WGEF. There were no major differences between previous landings and the new figures.

22.3.4 Discard survival

Limited data exist for the discard survival of angel shark caught in European fisheries. All three specimens observed by SMRU observers after capture by tangle- or trammel net were dead; soak times were 64–78 hours. Recently published observations from Corsica (Mediterranean) indicated that angel sharks caught by trammel nets in shallow water (<5 m depth) with shorter (<12 h) soak times could be released alive (Lapinski & Giovos, 2019).

Other angel shark species have been studied elsewhere in the world (Ellis *et al.*, 2017). Fennessy (1994) reported at-vessel mortality (AVM) of 60% for African angel shark *Squatina africana* caught by South African prawn trawlers. Braccini *et al.* (2012) reported AVM of 25% for Australian angel shark *S. australis* caught by gillnet (where soak times were <24 h).

22.4 Commercial catch composition

No data available.

22.5 Commercial catch and effort data

No data available for commercial fleets.

22.5.1 Recreational catch and effort data

Information from Inland Fisheries Ireland (IFI) was used by WGEF 2015 to inform on the status of angel shark. This exercise suggested that the number of specimen individuals caught by recreational fishers and reported to the specimen fish committee declined over the period 1958–2005 (Table 22.2), with an overall decline in the numbers caught (Figure 22.2).

Other data from the IFI National Marine Sport Fish Tagging Programme confirm the scarcity of angel shark. Tagging of angel sharks has declined markedly in the last 25 years. A total of 1029 individuals have been tagged since 1970, but only a single individual has been tagged since 2006, and no recaptured specimens reported since 2004 (Roche and O'Reilly, 2013 WD; Wögerbauer *et al.*, 2014 WD). Angel shark is now only caught by anglers very occasionally in Tralee Bay, estimated at <3 per year. The Irish angler tagging and specimen catch data have recently been combined with effort data from charter angling vessels to explore the apparent extirpation of this species from two former hotspots: Clew Bay and Tralee bay. This study showed a decline close to zero, despite apparent stable or increasing angler effort (Figure 22.5; Shephard *et al.*, 2019).

22.6 Fishery-independent data

Angel shark is encountered very rarely in trawl surveys, which may reflect the low abundance of the species, poor spatial overlap between surveys and refuge populations and their preferred habitats, and low catchability in some survey gears.

Occasional individuals have been captured in the UK beam trawl survey in Cardigan Bay, but the gear used (4 m beam trawl with chain mat) is not thought to be suitable for catching larger angel sharks.

Existing surveys are not considered appropriate for monitoring the status of this species. Dedicated, non-destructive inshore surveys in areas of known or suspected presence could usefully be initiated.

22.7 Life-history information

Limited life-history data are available (Table 22.3). Most recent biological data have come from studies in the Canary Islands (e.g. Meyers *et al.*, 2017), where this species is found regularly. Life-history parameters were recently collated by Ellis *et al.* (2021).

22.7.1 Habitat

Angel shark is a coastal species that has often been reported from sand bank habitats, sandy areas close to reefs, and similar topographic features. This ambush predator buries into the sand for camouflage. Angel sharks are thought to be nocturnally active (Standora and Nelson, 1977).

In terms of recent information on their habitats, a potential over-wintering area may occur off Pembrokeshire (51°30' to 52°00'N and 5°03' to 6°03'W; Figure 22.3), small specimens have been reported in Cardigan Bay (summer) and the western coast of Ireland (particularly Tralee Bay) may be important "summer areas" for the species (Wögerbauer *et al.*, 2014 WD). There are ongoing studies, coordinated by Zoological Society of London (ZSL) and Natural Resources Wales (NRW) to collate historic and recent sightings data around the Welsh coastline, especially Cardigan Bay.

22.7.2 Spawning, parturition and nursery grounds

No specific information. Angel sharks giving birth have been reported from parts of the North Sea (e.g. Patterson, 1905) and small specimens have been found in the inshore waters or Cardigan Bay. Information from other angel shark species elsewhere in the world suggests that there may be an inshore migration in early summer, with parturition occurring during the summer.

22.7.3 Age and growth

No information available for *Squatina squatina.* Studies on other species of angel shark have reported problems using vertebrae for validated age determination (Natanson and Cailliet, 1986; Baremore *et al.*, 2009), with tagging studies providing some data (Cailliet *et al.*, 1992).

22.7.4 Reproductive biology

Angel sharks give birth to live young. Patterson (1905) reported on a female (ca. 124 cm long) that gave birth to 22 young. Capapé *et al.* (1990) reported a fecundity of 8–18 (ovarian) and 7–18 (uterine) for specimens from the Mediterranean Sea. Embryonic development takes one year, but the reproductive cycle may be two (or more) years, as indicated by other members of the genus (Bridge *et al.*, 1998; Colonello *et al.*, 2007; Baremore, 2010).

22.7.5 Movements and migrations

Tagging data indicate high site fidelity (Capapé *et al.*, 1990; Quigley, 2006; ICES, 2013). More than half of tagged angel sharks were recaptured less than 10 km from their original location, but individuals are capable of travelling longer distances within a relatively short window (Figure 22.4; Wögerbauer *et al.*, 2014 WD). Occasional longer-distance movements have been reported,

with fish tagged off Ireland being recaptured off the south coast of England and in the Bay of Biscay (Quigley, 2006).

Seasonal migrations are suspected, with fish moving to deeper waters in the winter before returning to inshore waters for the summer. Other species of angel shark have also been shown to move into coastal waters in the summer, typically to give birth (Vögler *et al*., 2008).

The uncommon landing of about ten large individuals observed in 2000 from a French trawler fishing off southern Ireland, provide further evidence for localized aggregation of the species (S. Iglésias, *pers. comm*.).

22.7.6 Diet and role in the ecosystem

Angel shark is an ambush predator that predates on a variety of fish (especially flatfish) and various invertebrates (Ellis *et al*., 1996, 2021).

22.8 Exploratory assessment models

An exploratory stock assessment of the Tralee Bay (Division 7.j) population, using data from the IFI Marine Sportfish Tagging Programme (Section 22.5.1), was undertaken (Bal *et al.*, 2014 WD; ICES, 2014). This was updated after review (Bal *et al*., 2015 WD), with the approach, results and a discussion of the current state of the assessment presented in full in the WGEF 2015 report. In summary, Bal *et al*. (2015) suggested that the current population of angel shark around Ireland is very low compared to the whole historical time-series, although the actual population size remained uncertain. This trend was robust and indicated an important decline starting in the 1980s, concurring with anecdotal reports on angel shark abundance.

22.9 Stock assessment

Whilst no quantitative stock assessment has been benchmarked, due to data limitations, the WGEF perception of the stock is based largely on analyses of historical and contemporary trawl surveys.

Recent studies using recreational catch data have shown that the stock has declined dramatically in Clew and Tralee Bays - two former hotspots on the west of Ireland (Shephard *et al*., 2019). Angler catches of angel shark are now extremely rare at these locations, with only occasional anecdotal reports. Although it is not possible to conduct a quantitative stock assessment, it is evident that the species is in a critically poor state even in important areas of its original geographic range. The Irish Marine Institute is currently undertaking a multi-disciplinary research project on Angel shark in Tralee Bay, and this study may further clarify current stock abundance, as well as produce information on migration, nursery grounds, feeding etc.

Historically, coastal trawl surveys around the British Isles often reported angel shark, especially in the western English Channel (Garstang, 1903; Rogers and Ellis, 2000) and Bay of Biscay (Quéro and Cendrero, 1996). In contrast, contemporary surveys encounter this species only very infrequently, if at all. Such patterns have been reported elsewhere in the biogeographic range of angel shark (e.g. Jukic-Peladic *et al*., 2001).

The apparent scarcity of angel sharks in contemporary trawl surveys is in stark contrast to early texts on British fishes, which generally considered that angel shark were encountered regularly in British seas. Indeed, Yarrell (1836) stated that "*It is most numerous on the southern coast of our island; but it is occasionally taken in the Forth, and some other parts of the east coast, particularly around Cromer and Yarmouth. It is common on the coasts of Kent and Sussex …It is also taken in Cornwall*".

Similarly, Day (1880–1884) wrote "*In the Firth of Clyde it is by no means uncommon… In fact it is common in the North Sea and Bristol Channel. Occasionally taken off Yorkshire and is common on the Dogger Bank… taken on the coasts of Kent and Sussex, Hampshire and common at all times along the south coast…Common in Cornwall*". Similar examples are also evident in other accounts (see Table 22.4 and Ellis *et al.*, 2021).

WGEF considers that the comparisons of historical data with the near-absence in recent data (landings, surveys, observer programmes, angling data) are sufficient to consider the species to be severely depleted in the Celtic Seas ecoregion and possibly extirpated from the North Sea ecoregion. Whilst its status in the Bay of Biscay and Iberian coastal waters is unknown, it is considered very rare, with only occasional individuals reported.

22.10 Quality of the assessment

No formal stock assessment has been undertaken.

22.11 Reference points

No reference points have been proposed for this stock.

22.12 Conservation considerations

Angel shark is listed as Critically Endangered, both globally on the IUCN Red List (Morey et al., 2019) and the European Red List (Nieto *et al.*, 2015), is listed on the OSPAR List of Threatened and Declining Species (OSPAR Commission, 2010) and is protected on the UK's Wildlife and Countryside Act (see Section 22.4).

Various organizations (including conservation bodies and academic departments) are developing an Eastern Atlantic and Mediterranean Conservation Strategy for angel sharks (see www.angelsharknetwork.com).

Angel shark was listed on both Appendices I and II of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) at the 12th Meeting of the Conference of the Parties to (COP12) in 2017. Contracting Parties to CMS that are Range States (countries in the area of jurisdiction of which species occur) of species listed on Appendix I should prohibit the taking of such species, whilst the Appendix II listing indicates that international cooperation and agreements should be developed to aid the conservation and management of the listed species (https://www.cms.int/en/convention-text). Following the CMS listing, angel shark was subsequently, in 2018, added to Annex 1 of the CMS Memorandum of Understanding (MoU) on the Conservation of Migratory Sharks.

22.13 Management considerations

Angel shark is thought to have declined dramatically in the ICES area and Mediterranean Sea, as evidenced from landings data, survey information and the decline in the numbers tagged in Irish waters. The contemporary occurrence of angel shark in the southern parts of the ICES area and off the coasts of northwest Africa remains uncertain, whilst the Canary Islands have been considered as the last hotspot of the species (Meyers *et al.*, 2017).

Since ICES advised that this species should receive the highest protection possible, it has been listed as a prohibited species on European fishery regulations.

Dedicated, non-destructive surveys of areas of former local abundance would be needed to inform on current habitat and range, and to assess the possibilities of spatial management.

Given the perceived low productivity of this species and that they have shown high site fidelity, any population recovery would be expected to occur over a decadal time frame.

Improved liaison and training with the fishing industry is required to ensure that any specimens captured are released. National observer programmes encountering this species could usefully collect information on the vitality of discarded individuals.

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Table 22.1a. Angel shark in the Northeast Atlantic. Reported landings (t) for the period 1978–2004. French landings from ICES and Bulletin de Statistiques des Peches Maritimes. UK data from ICES and DEFRA. Belgian data from ICES. UK landings for 1997 considered to be misreported fish. Data for 2000 onwards updated during WGEF (2021).

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Belgium	.	.	.	.	.	.	.	.	.	.	.
France	8	3	32	26	29	24	19	18.7	19.5	18	13
UK	.	.	.	.	.	.	.	.	.	.	.
Total	8	3	32	26	29	24	19	18.7	19.5	18	13

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Belgium	.	.	.	.	.	.	.	.	.	.	.
France	9	13	14	12	11	2	2	1	1	1	1
UK	.	.	.	.	.	2	1	1	.	.	.
Total	9	13	14	12	11	4	3	2	1	1	1

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Belgium	.	.	.	.	.	.	.	.	.	.
France	2	1	2	+	1	+	+	+	+	0.03
UK	.	.	(47)	.	.	0.04	0.01	0.02	.	.
Total	2	1	2	0	1	0.04	0.01	0.02	0	0.03

Table 22.1b. Angel shark in the Northeast Atlantic. Reported landings (t) for the period 2005–2019, following WHSHARK2 (ICES, 2016) and subsequent data calls. Revised UK landings for 2017–2018 in 2020.

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Belgium	.	.	.	.	.	.	.	.	.	.	.	.
France	1.03	0.40	0.74	0.27	1.60	1.40	0.97	1.22	0.02	0.01	0.53	0.03
UK	0.06	0.04	0.01	.	.	.	.	.	.	.	.	.
Total	1.09	0.44	0.75	0.27	1.60	1.40	0.97	1.22	0.02	0.01	0.53	0.03

	2017	2018	2019	2020
Belgium	.	.	.	.
France	0.02	0.00	.	.
UK	0.13	0.02	0.08	.
Total	0.15	0.02	0.08	0

Table 22.2. Angel shark in the Northeast Atlantic. Numbers of specimen angel shark (total weight >22.68 kg) reported to the Irish Specimen Fish Committee from 1958–2005.

Year	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
No. specimen fish reported	3	1	0	0	4	1	15	13	5	13	0	2

Year	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
No. specimen fish reported	1	3	3	1	4	2	1	5	4	10	5	10

Year	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
No. specimen fish reported	7	3	2	2	0	1	1	2	2	2	1	3

Year	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
No. specimen fish reported	2	1	0	1	1	0	0	0	2	0	0	0

Table 22.3. Angel shark in the Northeast Atlantic. Summary of life-history parameters for *Squatina squatina*.

Common name	Angel shark			
Scientific name	*Squatina squatina*			
Stock unit	Unknown			
The stock structure is unknown, but available data for this and other species of angel sharks indicates high site fidelity, possibly with localized stocks. STECF (2003) noted that angel sharks "*should be managed on smallest possible spatial scale*". However, given that angel shark is perceived as highly threatened throughout the ICES area (and elsewhere in European waters), ICES provide advice at the species level.				
Length–weight relationship	$W = 0.021.L^{2.8269}$ (n = 24)			Ellis *et al.* (2021)
Reproductive mode	Aplacental viviparity			Capapé *et al.* (1990)
Reproductive cycle	Possibly biennial, based on data for congeneric species			Baremore (2010)
Spawning season	Parturition: Summer (possibly June to July)			Quigley (2006)
Fecundity (ovarian)	8–18 (mode = 13)			Capapé *et al.* (1990)
Fecundity (uterine)	8–18 (mode = 13) in the Mediterranean Up to at least 22 in the Atlantic			Capapé *et al.* (1990) Patterson (1905)
Development (months)	Annual			Capapé *et al.* (1990)
Length at birth/hatching	25–28 cm			Capapé *et al.* (1990)
Maximum length	244 cm			Quigley (2006)
	Female	**Male**	**Combined**	
Length of smallest mature fish	128 cm	80 cm (?)	–	Capapé *et al.* (1990)
Length at 50% maturity	–	–	–	–
Length of largest immature fish	–	–	–	–
Age at 1st maturity	–	–	–	–
Age at 50% maturity	–	–	–	–
Age at 100% maturity	–	–	–	–
L_{inf}	–	–	–	–
K	–	–	–	–
t_0	–	–	–	–
Maximum age (years)		–		–
Trophic role	Ambush predator that feeds on fish, including flatfish, and larger crustaceans (Ellis *et al.*, 1996)			

Table 22.4. Angel shark in the Northeast Atlantic. Regional chronology of perceived status of angel shark.

Area	Description
Southern North Sea	Laver (1898) "*This frequents the entire Essex coast. It is usually caught in nets. Though occasionally eaten by fishermen, it is according to my taste, far too rank in flavour for a more delicate palate*"
	Murie (1903) "*The 'fiddlers' are got all round the Kent coast in moderate quantity, but Webb regards it as somewhat of a rarity just at Dover. It is not a common fish in the Thames estuary, in one sense, though there are seasons when it is very frequently got in the trawlers' nets. In 1893 they were unusually plentiful during the summer months in the neighbourhood of the Oaze, Girdler, Gilman, and so called S. Channel generally. From June till August there were few boats but had examples among their catch, and some of the specimens were of large size*"
	Patterson (1910) "*has been brought into* (Lowestoft) *on several occasions*"
	Poll (1947) wrote "*Espècie commun, surtout en été*" [A common species, especially in summer]
English Channel	Buckland (1881) "*found in the North Sea, the British Channel, the Mediterranean … It is taken on the 'long lines' which are set for ray, &c … It is common on the bays of Archachon and, I believe, on the sandy banks all along the Bay of Biscay. They are frequently seen in the markets of Dieppe, and are not uncommon at Brighton and Hastings*"
	Aflalo (1904) "*familiar on most parts of the coast, and is a frequent object of unintentional capture on the long-lines, as well as in both trawl and drift-nets … Small examples of from 12 to 18"are common in many south coast estuaries, notably at Teignmouth, where a few are brought ashore almost every week during May in the sand-eel seines worked just outside the bar*"
	Le Danois (1915) "*à Roscoff, assez commun vers la fin de l'été*" [At Roscoff, it is quite common in late summer]
	Cooper (1934) "*Several specimens of this species are caught every year by anglers, usually when Tope fishing, but it appears to have been more common on the south coast of England some twenty or thirty years ago than it is today*"
	MBA (1957) "*A haul of the trawl in Cawsand Bay will generally yield several specimens. Occasionally trawled on other grounds*"
Irish Sea Ireland	Herdman and Dawson (1902) "*common off our coasts in spring and summer. It occurs not infrequently in the trawl net in the Lancashire district. We have taken it as near Liverpool as the Rock and Horse Channels, and the Deposit Buoy. We have also taken it near Piel in the Barrow Channel, and off Maughold Head. Mr Walker records it from Rhos weir and Colwyn Bay, and Professor White from the Menai Straits. It has been frequently taken off the Isle of Man, one is recorded from Port Erin, and we have taken it also in the Ribble, and have seen it taken on the offshore grounds by the trawlers*"
	Forrest (1907) "*… frequently met with it off Aberffraw … from Barmouth … not uncommon in the Menai Straits, Colwyn Bay and along the north coast …* (taken in) *St Tudwal's Roads, Red Wharf Bay, and other places*"
	Williams (1954) "*Taken rather infrequently off Strangford Bar. Said to be common off the north shore of Ireland"*
	Went & Kennedy (1976) listed it as common noting that it was "*more often caught on rod and line than by any other method*"

Table 22.4. (continued). Angel shark in the Northeast Atlantic. Regional chronology of perceived status of angel shark.

Area	Description
France (Bay of Biscay and Mediterranean)	Moreau (1881) "*L'Ange se trouve sur toutes nos côtes, mais il paraît plus commun dans l'ocean que dans la Méditerranée, il est même assez rare à Cette*" [Angel shark is on all our coasts, but it seems more common in the (Atlantic) ocean than in the Mediterranean, it is quite rare at Séte] Quéro *et al*. (1989) recorded individual fish from trawl surveys, including one from coastal waters near Pornic (just south of the Loire Estuary) in 1973 and one further offshore south-west of the mouth of the Gironde in 1975
Spain	Lozano Rey (1928) reported that angel shark "*vive en todo el litoral ibérico, aunque parece más frecuente en las costas del Atlántico que en las del Mediterráneo, pero en este tampoco es rara … Los individuos jóvenes se pescan en la misma orilla. Nosotros hemos capturadao ejemplares de este especie, de menos de treinta centímetros de longitude, en la bahía de Santander, a un par de metros de profundidad*" [lives all along the Iberian coast, although it seems more common in the Atlantic coasts than in the Mediterranean, but this is not unusual ... Young individuals are caught in the same bank. We have captured specimens of this species, less than 30 cm long, in the Bahía de Santander, in waters a few meters deep] In relation to the Bahía de Santander, García-Castrillo Riesgo (2000) noted "*Hoy en día, esta especie de angelote no está presente en el entorno de la Bahía. La última referencia que tenemos data de 1985, cuando se recogió un ejemplar adulto y moribundo en el Puntal. Por el contrario a principios de siglo, según los datos de la Estación Biólogica de Santander, los jovenes eran frecuentes en los arenales del Puntal, el sable de Afuear, Enmedio y el fondeadero de la Osa, siendo aún más abundantes en al Abra del sardinero y las Quebrantas*". [Today, this kind of angelfish is not present in the environment of the Bahía. The last reference we have dates from 1985, when a dying adult specimen was collected in the Puntal. Rather early in the century, according to data from the Biological Station of Santander, the young were frequent off the beach at Puntal, saber Afuear, Enmedio and the anchorage of the Osa, still more abundant in the Abra del Sardinero and Quebrantas]
Portugal	Nobre (1935) wrote "*Esta espécie aparece freqüentemente no norte do País, sendo apanhada nas rêdes de fundo*" [This species appears frequently in the north of the country, where it is caught in bottom nets]
Italy	Tortonese (1956) stated it was "*Più o meno commune in tutti i nostri mari*" [more or less common in all our seas]

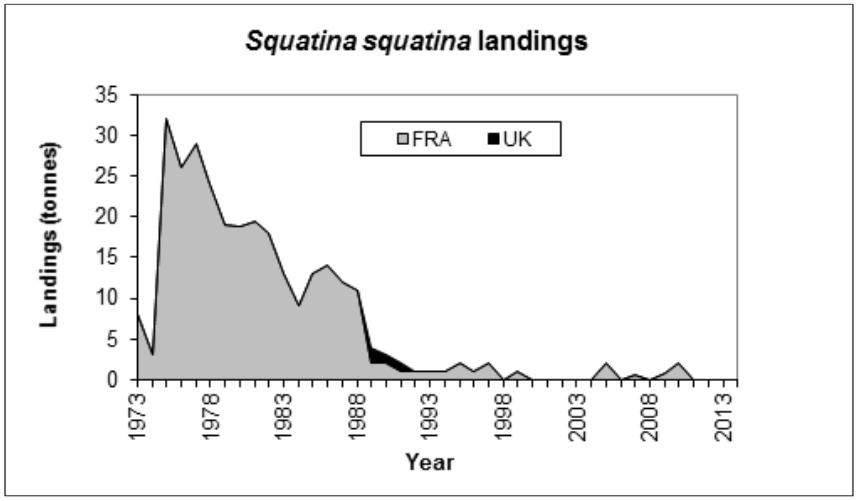

Figure 22.1. Angel shark in the Northeast Atlantic. Total reported landings of *Squatina squatina* (1973–2012). Angel shark has been listed as a non-retained/prohibited species on European fisheries regulations since 2009 and so this species is now reported very rarely in landing statistics.

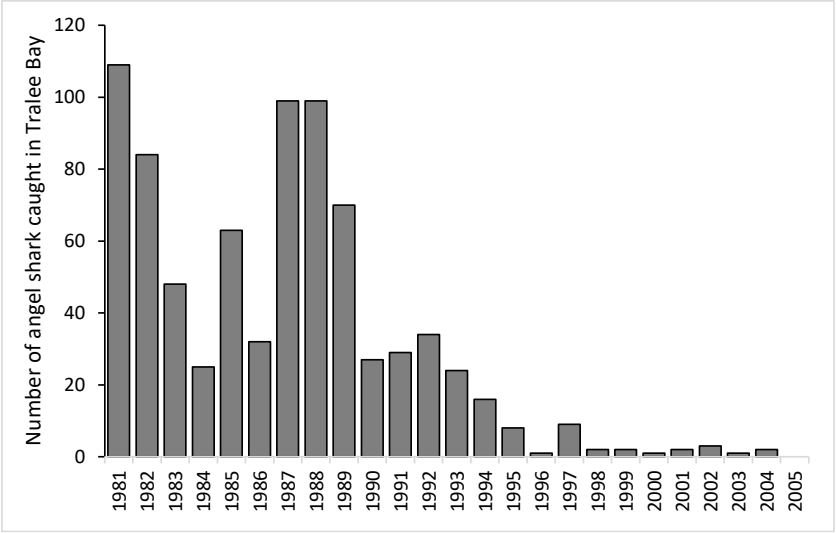

Figure 22.2. Angel shark in the Northeast Atlantic. Numbers of angel shark caught by two charter boats in Tralee Bay 1981–2005. Adapted from Irish Central Fisheries Board data presented in ICES (2008).

Figure 22.3. Angel shark in the Northeast Atlantic. The suspected over-wintering area off Pembrokeshire, where occasional individuals have been reported by French vessels.

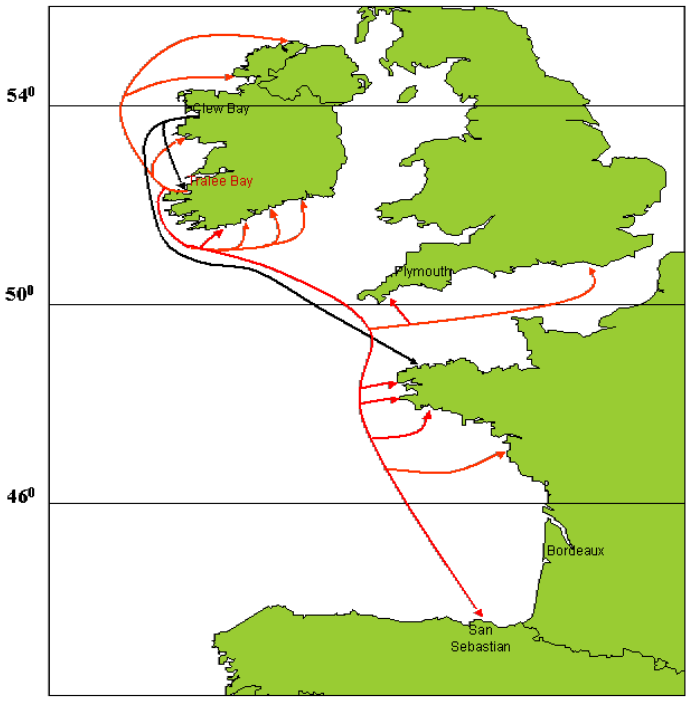

Figure 22.4. Angel shark in the Northeast Atlantic. Longer-distance movements of angel shark tagged off the west coast of Ireland, 1970–2006. Source: Irish Central Fisheries Board.

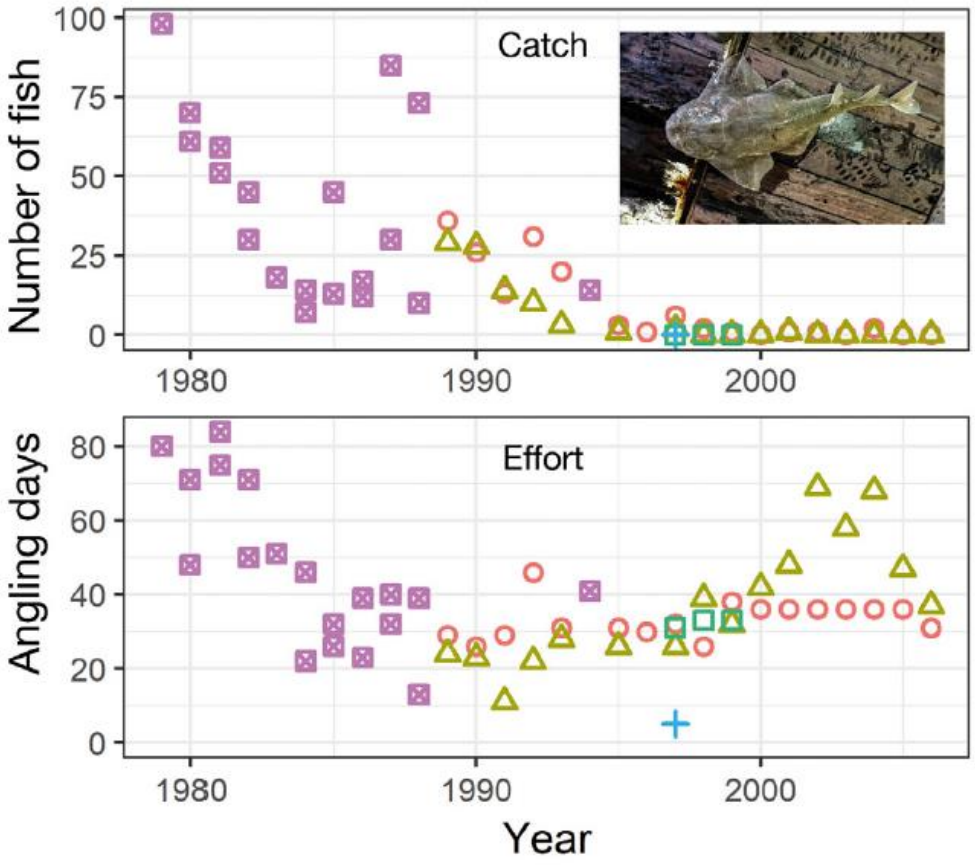

Figure 22.5. ***Squatina squatina*** **annual angling catch and effort for charter vessels in Tralee Bay, Ireland. Inset photograph of** ***S. squatina*** **(100 cm total length) caught and released alive from FV 'Eblana' in 2016. Colours of the data points refer to different vessels. Figure from Shephard** ***et al.*** **(2019).**